

REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

I. CLAIM STATUS AND AMENDMENTS

Claims 1-21 were pending in this application when last examined.

Claims 1-14 were examined on the merits and stand rejected.

Claims 15-21 were withdrawn from consideration as non-elected subject matter.

Claims 1-14 are cancelled without prejudice or disclaimer thereto.

Claims 22-28 are newly added. Support for the phrase “a mutant thereof which results from a deletion, substitution or addition of one amino acid residue” in newly added claim 22 and the equivalent in claim 25 can be found on page 5, lines 24-25 and page 10, lines 28-29 of the specification as filed. Further support for newly added claims 22-27 can also be found in the claims as filed and on page 28, lines 10-25, of the specification as filed.

No new matter has been added.

II. 35 U.S.C. § 101 REJECTIONS

On page 2 of the Office Action, claims 1-14 were rejected under 35 U.S.C. § 101 as directed to nonstatutory subject matter. The Office argues that the claimed invention is a product of nature that is not directed to practical application.

Applicants note that these claims have been cancelled and therefore this rejection is moot. Applicants further note that new claims 22-28 recite “isolated” as suggested by the Examiner. This rejection is therefore overcome.

III. ENABLEMENT REJECTION- DEPOSIT OF MICROORGANISMS

On page 3 of the Office Action, claims 9 and 14 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

This rejection is respectfully traversed as applied to the amended claims.

Attached herewith is a Declaration of Microorganism Availability and deposit receipt for the microorganism *Aspergillus terreus* (FERM BP-08578). These documents are evidence that the microorganism was deposited under the terms of the Budapest Treaty.

Pursuant to 37 CFR § 1.808, (1) access to the deposit will be available during pendency of the patent application making reference to the deposit to one determined by the Director to be entitled thereto; and (2) subject to paragraph (b) of 37 C.F.R § 1.808, all restrictions imposed by the depositor on the availability to the public of the deposited material will be irrevocably removed upon the granting of the patent.

In view of the above, the lack of enablement rejection under 35 U.S.C. § 112, first paragraph is untenable and should be withdrawn.

IV. INDEFINITENESS REJECTION

On pages 4-5 of the Office Action, claim 10 was rejected under 35 U.S.C. § 112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter of the invention such that a skilled artisan can determine the metes and bounds of the claimed invention. In particular, the Office indicates that the term “substantially equivalent characteristics” in claim 10 renders the claim indefinite. This rejection has been overcome for reasons which are self-evident.

V. ANTICIPATION REJECTIONS

On pages 5-6 of the Office Action, claims 1, 5-7 and 10-12 were rejected under 35 U.S.C. § 102(b) as anticipated by EP 1176202.

On page 6-7, claims 1, 5-7 and 10-12 were rejected under 35 U.S.C. § 102(b) as anticipated by JP 2001-346587.

On page 7-8, claims 1, 5-7 and 10-12 were rejected under 35 U.S.C. § 102(e) as anticipated by Kratzsch (U.S. 7,132,270).

On page 8-9, claims 1, 5-7 and 10-12 were rejected under 35 U.S.C. § 102(b) as anticipated by Sode (U.S. 6,103,509).

On page 9-10, claims 1, 4-7, 11 and 12 were rejected under 35 U.S.C. § 102(b) as anticipated by Bak (Biochimica Biophys. Acta, 1967).

Applicants respectfully traverse these rejections.

In particular, Applicants note that the rejected claims have been deleted and therefore these rejections are moot.

Furthermore, Applicants note that new claim 22 incorporates the features of previously pending claims 2, 4 and 8. It is noted that claims 2 and 8 were not subject to any of the above anticipation rejections. It is further noted that claim 4 was only subject to the anticipation rejection over Bak. Applicants therefore note that none of the cited references teach or suggest all the elements of new claim 22. Therefore, this rejection is overcome.

VI. OBVIOUSNESS REJECTION

On page 11 of the Office Action, claims 1-3, 5-7 and 10-12 were rejected under 35 U.S.C. § 103(a) as obvious over EP 1176202 or Kratzsch (U.S. 7,132,270) or JP 2001-346587 or Sode (U.S. 6,103,509) in view of Dickinson et al (Biochem J. 1977, p. 237-244) and Pire (J. Molecular Catalysis, Enzymatic, 2000, p. 409-417).

These claims have been cancelled and therefore this rejection is moot. Furthermore, new claim 22 incorporates the limitations of claims 4 and 8, which were not included in this rejection. Thus, Applicants suggest that these references fail to teach or suggest each and every element of new claim 22 and this rejection is overcome.

On page 13 of the Office Action, claims 1-9, 11, 12 were rejected under 35 U.S.C. § 103(a) as obvious over Bak (Biochimica Biophys. Acta, 1977) in view of Dickinson et al (Biochem J. 1977, p. 237-244) and Pire (J. Molecular Catalysis, Enzymatic, 2000, p.409-417).

Applicants respectfully note that the pending claims have been cancelled and therefore this rejection is overcome. Furthermore, with regard to the new claims, Applicants provide the following remarks:

Dickinson et al. discloses the inhibition of yeast alcohol dehydrogenase of 1,10-phenanthroline.

Pire merely describes that *Hf.mediterranei* glucose dehydrogenase contains tightly bound metal ions which are essential for activity in section 4.2, lines 3-5. Pire never teaches the above issue in a broad sense referring to glucose dehydrogenase in general.

Thus, the glucose dehydrogenase disclosed in claim 22 of the present invention is different both in kind and origin from the glucose dehydrogenase disclosed in Dickinson et al. or Pire.

Applicants therefore contend that one of ordinary skill in the art would not be taught or suggested by the cited references that such a specific glucose dehydrogenase as that obtainable from *Aspergillus terreus* would be inhibited by 1,10-phenanthroline.

As described on page 6, lines 4-20 of the present specification, the glucose dehydrogenase disclosed in Bak originated from *Aspergillus oryzae*. It is described in the above section that said glucose dehydrogenase is characterized by being inhibited only by a heavy metal ion, but not by a metal chelator, including 1,10-phenanthroline.

The above statement clearly teaches away from the claimed invention, which discloses that the glucose dehydrogenase obtainable from *Aspergillus terreus* is inhibited by 1,10-phenanthroline.

Those facts are originally mentioned on page 330, lines 4-9 of Bak.

Accordingly, taking the above differences and the facts disclosed in Bak into consideration, at the time of the claimed invention, one of ordinary skill in the art would not have had a reasonable expectation for successfully inhibiting glucose dehydrogenase using 1,10-phenanthroline.

Further, as described on page 6, lines 13-18 of the specification, another important advantage of the glucose dehydrogenase of the claimed invention is its higher stability than that of Bak.

More specifically, as described on page 288 of Bak, in the same measurement as Example 3 of the claimed invention, the enzymatic activity of the GDH of Bak will be reduced to about 60% at 50°C for 15 min whereas the GDH of the claimed invention will have an enzymatic activity at a level as high as 89%.

Therefore, Applicants believe that the unexpected effects of the glucose dehydrogenase of the claimed invention, as described above, further demonstrate that the claimed subject matter is patentable over Bak in view of Dickinson et al and Pire.

For the reasons noted above, this rejection is overcome.

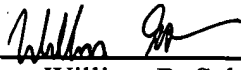
CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and early notice to that effect is hereby requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact the undersigned attorney at the telephone number below.

Respectfully submitted,

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ATTACHMENT

1. Declaration of Microorganism Availability and deposit receipt for the microorganism *Aspergillus terreus* (FERM BP-08578) (2pp).

「特許手続上の微生物の寄託の国際的承認
に関するブタペスト条約」

下記国際寄託当局によって規則7.1に従い
発行される。

BUTAPEST TREATY OF THE INTERNATIONAL
RECOGNITION OF THE DEPOSIT OF MICROORGANISMS
FOR THE PURPOSES OF PATENT PROCEDURE

RECEIPT IN THE CASE OF AN ORIGINAL DEPOSIT
issued pursuant to Rule 7.1 by the INTERNATIONAL
DEPOSIT AUTHORITY identified at the bottom of this page.

原寄託についての受託証

氏名 (名称)

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1. 微生物の表示	
(寄託者が付した識別のための表示) 97508	(受託番号) FERM BP- 08578
2. 科学的性質及び分類学上の位置	
1欄の微生物には、次の事項を記載した文章が添付されていた。 <input type="checkbox"/> 科学的性質 <input checked="" type="checkbox"/> 分類学上の位置	
3. 受領及び受託	
本国際寄託当局は、平成 14 年 11 月 13 日(原寄託日)に受領した1欄の微生物を受託する。	
4. 移管請求の受領	
本国際寄託当局は、平成 14 年 11 月 13 日(原寄託日)に受領した1欄の微生物を受託した。 そして、平成 15 年 12 月 18 日に原寄託によりブタペスト条約に基づく寄託への移管請求を受領した。 (平成 14 年 11 月 13 日に寄託されたFERM P- 19103 号より移管)	
5. 国際寄託当局	
名称 独立行政法人産業技術総合研究所 特許生物寄託センター International Patent Organism Depositary National Institute of Advanced Industrial Science and Technology センター長 岡 修 Dr.Syuichi Oka, Director	
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平成 15 年 (03) 12 月 18 日

「特許手続上の微生物の寄託の国際的承認
に関するブタペスト条約」

下記国際寄託当局によって規則10.2に従い
発行される。

BUTAPEST TREATY OF THE INTERNATIONAL
RECOGNITION OF THE DEPOSIT OF MICROORGANISMS
FOR THE PURPOSES OF PATENT PROCEDURE
VIABILITY STATEMENT
Issued pursuant to Rule 10.2 by the INTERNATIONAL
DEPOSITARY AUTHORITY identified at the bottom page.

生存に関する証明書

氏名(名称) 池田食研株式会社
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<p>1. 寄託者</p> <p>氏名(名称) 池田食研株式会社 代表取締役社長 桑田 和典</p> <p>あて名 〒 721-0956 広島県福山市箕沖町95番地7</p>	<p>2. 微生物の表示</p> <p>受託番号: FERM BP- 08578</p> <p>受託の日: 平成 14 年 11 月 13 日</p>
<p>3. 生存試験の結果</p> <p>2欄の微生物の生存について平成 15 年 11 月 25 日に試験を実施した結果、当該微生物は、</p> <p><input checked="" type="checkbox"/> 生存していた。</p> <p><input type="checkbox"/> 生存していなかった。</p>	
<p>4. 生存試験に際して使用した条件(結果が否定的である場合のみ)</p> <p><input type="checkbox"/> 微生物条件記録書 1通</p>	
<p>5. 国際寄託当局</p> <p>名称 独立行政法人産業技術総合研究所 特許生物寄託センター International Patent Organism Depositary National Institute of Advanced Industrial Science and Technology</p> <p>センター長 岡 修一 Dr. Syuichi Oka, Director</p> <p>あて名 日本国茨城県つくば市東1丁目1番地1 中央第6(郵便番号305-8566) AIST Tsukuba Central 6, 1-1, Higashi 1-Chome Tsukuba-shi, Ibaraki-ken 305-8566 Japan</p>	

平成 16 年 (04) 1 月 5 日